

UTILITY PATENT APPLICATION TRANSMITTAL (Only for new nonprovisional applications under 37 CFR 1.53(b))		Attorney Docket No. 000673	Total Pages
Check box if applicable <input type="checkbox"/> Duplicate		First Named Inventor or Application Identifier	
		Hideharu TODA and Shoji ARIKUMA	
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APPLICATION ELEMENTS FOR: COMPONENT SELECTION CONTROL SYSTEM		ADDRESS TO: Director of Patents and Trademarks BOX PATENT APPLICATIONS Washington, D.C. 20231	

1. ☒ Fee Transmittal Form (Incorporated within this form) **(The filing fee is deferred).**
2. ☒ Specification Total Pages [23]
3. ☒ Drawing(s) (35 USC 113) Total Sheets [3]
4. ☐ Oath or Declaration Total Pages []
NOT attached; deferred under P.L. 97-247.
 - a. ☐ Newly executed (original)
 - b. ☐ Copy from prior application (37 CFR 1.63(d)
 (for continuation/divisional with Box 17 completed).
 - i. ☐ Deletion of Inventor(s)
 Signed statement attached deleting inventor(s) named in prior application,
 see 37 CFR 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation by reference (useable if box 4b is checked)
 The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under
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ACCOMPANYING APPLICATION PARTS

8. ☐ Assignment Papers (cover sheet and document(s))
9. ☐ 37 CFR 3.73(b) Statement (when there is an assignee) [] Power of Attorney

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10. ☐ English translation Document (if applicable)

11. ☐ Information Disclosure Statement ☐ Copies of IDS Citations

12. ☐ Preliminary Amendment

13. ☒ Return Receipt Postcard (MPEP 503)

14. ☐ Small Entity Statement(s) ☐ Statement filed in prior application
Status still proper and desired.

15. ☐ Claim for Convention Priority ☐ Certified copy of Priority Document(s)

a. Priority of _____ application no. _____ filed on _____ is claimed under 35 USC 119.

The certified copies/copy have/has been filed in prior application Serial No. _____.

(For Continuing Applications, if applicable)

16. ☐ Other _____

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information:

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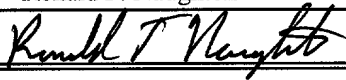
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Date: May 26, 2000

REN/yap

COMPONENT SELECTION CONTROL SYSTEM

The present invention relates to component selection systems which comprise a plurality of components such as a tuner, CD player, tape recorder, MD player, DVD player and amplifier and which are adapted to select one signal output component from among these components to feed an audio signal and/or video signal (AV signal) output from the selected component to other signal input component.

Audio component systems are already in wide use which comprise a plurality of audio components such as a tuner, CD player, tape recorder and MD player as connected to one another.

For example, FIG. 4 shows an audio component system which comprises audio components, i.e., a tuner 20, CD player 30, tape recorder 40 and MD player 50, which are connected to an amplifier unit 9. A speaker 6 is connected to the output terminal of the amplifier unit 9 for delivering as its sound output an audio signal sent out from one audio output component selected by the amplifier unit 9, e.g., from the CD player 30. Further

one audio output component selected by the amplifier unit 9, e.g., the tuner 20, feeds an audio signal to one audio input component, e.g., to the MD player 50, which records the audio signal.

5 The amplifier unit 9 has a plurality of signal input terminals a, b, c, d having connected thereto signal output lines 81 to 84 extending from the audio output components, and a plurality of signal output terminals e, f having connected thereto signal input lines 85, 86
10 extending from the audio input components.

 The signal input terminals a, b, c and d are connected via a selector 91 to a signal processing system comprising a preamplifier 92, audio signal processing circuit 93 and post amplifier 94, and an
15 audio signal is delivered to the speaker 6 via the signal processing system. The output terminal of the preamplifier 92 is connected to the signal output terminals e, f through a plurality of on-off switches 95, 96, and an audio signal is delivered from the
20 terminal e or f to the tape recorder 40 or MD player 50.

 The selector 91 and the on-off switches 95, 96 are controlled by a control circuit 98 to realize an operation in accordance with the manipulation of an input unit 97 by the user. For example, when the audio

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signal to be produced by the CD player 30 is to be recorded on an MD (mini disk) by the MD player 50, the input unit 97 is manipulated to select the CD player 30 as a signal output component and the MD player 50 as a
5 signal input component, whereupon the selector 91 is switched to the input terminal connected to the CD player 30, the on-off switch 95 connected to the tape recorder 40 is opened, and the on-off switch 96 connected to the MD player 50 is closed.

10 Consequently, the audio signal from the CD player 30 is fed to the MD layer 50 by way of the selector 91, preamplifier 92 and on-off switch 96 and recorded on the MD.

With the conventional audio component system
15 described, however, the signal output lines 81 to 84 and the signal input lines 85, 86 each comprise three conductors, i.e., a right-channel signal conductor, left-channel signal conductor and ground conductor. Accordingly, for example when the connection of the four
20 audio components 20, 30, 40, 50 are to be connected to the amplifier unit 9 as illustrated, there is a need to use twelve signal conductors in all, and the amplifier unit 9 needs to be provided with twelve signal input or output terminals for the connection of these twelve

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signal conductors. The numbers of the signal conductors and signal input or output terminals required increase with an increase in the number of audio components providing the system.

- 5 As a result, the signal input and output terminal portions of the amplifier unit 9 occupy an increased area, not only making the amplifier unit 9 greater in size but also entailing the problem of an increased parts cost due to the increase in the number of signal
- 10 conductors or lines and the problem of a cumbersome signal line connecting procedure by the user.

SUMMARY OF THE INVENTION

- Accordingly, an object of the present invention is to provide a component selection control system which is
- 15 greatly reduced in the numbers of signal conductors or lines and terminals conventionally required for the connection of components.

- The present invention provides a component selection control system comprising a plurality of signal output
- 20 components for outputting AV signals including audio signals and/or video signals, at least one signal input component for receiving the AV signal, and a signal processing control unit having connected thereto the signal output components and the signal input component.

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The signal processing control unit is operable to process the AV signal delivered from desired one of the signal output components as required for sound and/or image reproduction and to feed the AV signal delivered from the desired signal output component to the signal input component.

The signal output components each have an on-off switch provided on a signal output line for delivering the AV signal to the signal processing control unit therethrough. The signal processing control unit has a common input terminal for receiving the AV signal from the desired signal output component. The signal output lines of the signal output components are connected to one another at a point connected to the common input terminal of the control unit. One signal output component for feeding its AV signal to the signal processing control unit is selected by controlling the on-off switches for opening or closing.

With the component selection control system of the invention described, one of the signal output components desired is selected to feed the AV signal to be delivered from the selected output component to the signal input component. In this case, the on-off switch provided in the desired signal output component is

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closed, and the on-off switches of the other output components are opened, whereby the AV signal delivered from the signal output component is fed to the common input terminal of the signal processing control unit through the closed on-off switch.

Since the on-off switches of the other signal output components are turned off, it is unlikely that the AV signals delivered from these output components will be fed to the control unit.

10 The AV signal fed to the signal processing control unit is processed as required for sound and/or image reproduction, then sent to a subsequent circuit and output as a sound and/or image. Alternatively, the AV signal fed to the control unit is fed to the signal
15 input component and recorded by the input component.

With the component selection control system of the invention described, the signal output lines extending from the respective signal output components are connected, as connected to one another, to the common
20 input terminal of the signal processing control unit, so that the numbers of signal lines and terminals to be connected to the common input terminal are reduced from the corresponding numbers of lines and terminals conventionally used to a fraction of the number of

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signal output components.

According to an embodiment of the invention, the signal processing control unit has a common output terminal for delivering the AV signal to the signal
5 input component. The common output terminal is connected to a signal input line of the input component. With this embodiment, the AV signal delivered from the selected signal output component to the signal processing control unit is fed from the common output
10 terminal to the signal input component and recorded by the input component.

The component selection control system can be composed of a plurality of signal input components for receiving AV signals. The signal input components each
15 have an on-off switch provided on a signal input line to be supplied with the AV signal from the signal processing control unit. The input signal lines are connected to one another at a point, which is connected to the common signal output terminal of the control
20 unit.

In the case where desired one of the signal output components and desired one or more of the signal input components are selected to feed the AV signal to be delivered from the selected output component to the

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selected input component or components, the on-off switch in the selected output component is closed, the on-off switches of the other output components are opened, and the on-off switch in the signal input component is closed, whereby the AV signal delivered from the output component is fed to the common input terminal of the signal processing control unit through the closed on-off switch and further delivered from the control unit delivers through the common output terminal to the signal input component through the closed on-off switch thereof.

With the component selection control system of the invention described, the signal input lines extending from the respective signal input components are connected, as connected to one another, to the common output terminal of the signal processing control unit, so that the numbers of signal lines and terminals to be connected to the common output terminal are reduced from the corresponding numbers of lines and terminals conventionally used to a fraction of the number of signal input components.

The component selection control system of the invention is greatly reduced in the number of signal lines and terminals conventionally required for the

connection of components. This diminishes the area to be occupied by the terminal portion of the signal processing control unit, not only making the system smaller in size but also ensuring a reduced cost and
5 facilitating the signal line connection procedure to be performed by the user owing to a reduction in the number of signal lines.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram showing the construction
10 of an audio component system embodying the invention;

FIG. 2 is a flow chart showing the operation of a control circuit of an amplifier unit constituting the audio component system;

FIG. 3 is a flow chart showing the operation of a
15 control circuits of components constituting the system; and

FIG. 4 is a block diagram showing the construction of a conventional audio component system.

DETAILED DESCRIPTION OF EMBODIMENT

20 The present invention as embodied into an audio component system will be described below in detail with reference to the drawings.

As shown in FIG. 1, the audio component system embodying the invention comprises audio components,

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i.e., a tuner 2, CD player 3, tape recorder 4 and MD player 5, which are connected to an amplifier unit 1. A speaker 6 is connected to the output terminal of the amplifier unit 1 for delivering as its sound output an audio signal sent out from one audio output component selected by the amplifier unit 1, e.g., from the CD player 3. Further one audio output component selected by the amplifier unit 1, e.g., the tuner 2, feeds an audio signal to one audio input component, e.g., to the MD player 5, which records the audio signal.

The tuner 2 comprises an audio output circuit 21 for regenerating an audio signal from broadcast waves received and outputting the signal, an on-off switch 23 provided on a signal output line 73 extending from the audio output circuit 21, and a control circuit 22 for controlling the operation of the circuit 21 and the switch 23.

The CD player 3 comprises an audio output circuit 31 for regenerating an audio signal from a CD and outputting the signal, an on-off switch 33 provided on a signal output line 74 extending from the audio output circuit 31, and a control circuit 32 for controlling the operation of the circuit 31 and the switch 33.

The taper recorder 4 comprises an audio output

10 45.

20 and the switches 54, 55.

signal line 71. The signal line 71 is connected to a

common input terminal g provided on the amplifier unit 1. The signal input lines 77, 78 extending from the audio input circuits 42, 52 are connected to each other at a point, which is connected to a common signal line 72. The signal line 72 is connected to a common input terminal h provided on the amplifier unit 1.

The amplifier unit 1 comprises a signal processing system 16 comprising a preamplifier 11, an audio signal processing circuit 12 and a post amplifier 13 and connected to the common input terminal g. The audio signal passed through the signal processing system 16 is delivered to the speaker 6. The output terminal of the preamplifier 11 is further connected to the common output terminal h by a signal output line 17. The audio signal output from the common output terminal h is fed to the tape recorder 4 or the MD player 5 through the common signal line 72 and the signal input line 77 or 78.

For simplified illustration, FIG. 1 shows the signal output lines 73 to 76, the signal input lines 77, 78 and the common signal lines 71, 72 each in the form of a single signal line, whereas these signal lines each comprise three conductors, i.e., a left-channel signal conductor, right-channel signal conductor and ground

conductor.

An input unit 14 which is to be manipulated by the user is connected to a control circuit 15, which is connected by a control bus 7 to the control circuits 22, 32, 43, 53 included in the respective components 2 to 5 to realize an operation specified by the user's manipulation.

For example, when the audio signal to be output by the CD player 3 is to be recorded on an MD by the MD player 5, the input unit 14 is manipulated to select the CD player 3 as a signal output component and the MD player 5 as a signal input component, whereupon the control circuit 15 of the amplifier unit 1 feeds control signals to the respective control circuits 22, 32, 43, 53 of the components 2 to 5, causing the control circuits 22, 32, 43, 53 to turn on or off the respective on-off switches 23, 33, 44, 45, 54, 55. Stated more specifically, the switch 33 of the CD player 3 is turned on, and the switch 23 of the tuner 2, the switch 44 for the audio output circuit 41 of the tape recorder 4 and the switch 54 for the audio output circuit 51 of the MD player 5 are turned off. Further the switch 55 for the audio input circuit 52 of the MD player 5 is turned on.

As a result, the audio signal delivered from the

audio output circuit 31 of the CD player 3 is fed to the common input terminal g of the amplifier unit 1 via the switch 33, signal output line 74 and common signal line 71. The audio signal fed to the terminal g is amplified by the preamplifier 11 and then delivered from the common output terminal h via the signal output line 17.

Even if an audio signal is output from the audio output circuit 21 of the tuner 2, the audio output circuit 41 of the tape recorder 4 or the audio output circuit 51 of the MD player 5 at this time, the signal will not flow into the common signal line 71 since the switches 23, 44, 54 are off.

The audio signal delivered from the common output terminal h of the amplifier unit 1 is passed through the common signal line 72 to the signal input line 78 of the MD player 5 and further fed to the audio input circuit 52 via the switch 55 to record the audio signal on the MD.

Incidentally, the audio signal delivered from the common output terminal h of the amplifier unit 1 can be recorded on both the magnetic tape and the MD at the same time by closing the switch 45 of the tape recorder 4 and the switch 55 of the MD player 5 and setting both the taper recorder 4 and the MD player 5 in a recording

mode.

FIG. 2 shows the control operation of the control circuit 15 of the amplifier unit 1 in the audio component system, and FIG. 3 shows the control operation of the control circuits 22, 32, 43, 53.

With reference to FIG. 2, the control circuit 15 of the amplifier unit 1 first inquires in step S1 whether one of function keys on the input unit 14 has been depressed. When the answer is affirmative, step S2 follows to output a function code corresponding to the depressed function key. The sequence thereafter returns to step S1 to wait for the depression of function key.

With reference to FIG. 3, on the other hand, each of the control circuits 22, 32, 43, 53 of the components inquire first in step S11 whether the function code has been received. When the answer is affirmative, step S12 follows, in which the control circuit inquires whether the function code is addressed to itself. When the answer is affirmative, the circuit closes the on-off switch of its own, whereas if the answer is negative, the circuit opens the on-off switch of its own. Step S11 then follows to wait for the reception of a function code.

According to the control procedures described above,

the user manipulates the input unit 14 of the amplifier unit 1 to select the desired signal output component and also select the desired signal input component, whereby the audio signal delivered from the desired output component can be fed to the desired input component for recording.

With the audio component system of the present invention shown in FIG. 1, the signal output lines 73 to 76 extending from the respective signal output components 2 to 5 are connected, as connected to one another, to the common signal line 71, while the signal input lines 77, 78 extending from the respective signal input components 4, 5 are connected, as connected to each other, to the common signal line 72, so that even in the case where the signal output lines and the signal input lines each comprise three conductors, i.e., a left-channel signal conductor, right-channel signal conductor and ground conductor, only three conductors, i.e., left-channel signal conductor, right-channel signal conductor and ground conductor, need to be used for each of the common signal lines 71, 72 to be connected respectively to the common input terminal g and the common output terminal h of the amplifier unit 1, with three terminals provided on the amplifier unit 1 for use

as the common input and output terminals g, h for connection to the three signal conductors.

The number of common signal lines and the number of common input terminal and common output terminal remain
5 unincreased even if the system comprises an increased number of components. Accordingly the space required for providing the common input and output terminals on the amplifier unit 1 can be much smaller than in the prior art wherein an input terminal and an output
10 terminal are provided for each component. This diminishes the size of the amplifier unit 1.

The reduction in the number of signal lines to be connected to the amplifier unit 1 not only entails a reduced parts cost but also facilitates the signal line
15 connecting procedure to be performed by the user.

Further with the embodiment shown in FIG. 1, each component has an on-off switch and a control circuit for controlling the switch of its own, so that additional components are connectable to the system easily. The
20 system is highly amenable to expansion.

The system of the invention is not limited to the foregoing embodiment in construction but can be modified variously by one skilled in the art without departing from the spirit of the invention as set forth in the

appended claims. For example, it is possible to construct a component selection control system which includes a VCR, DVD or like video device as its component. In this case, the signal processing system
5 may comprise a video processing circuit for displaying video signals on an image monitor in place of the audio signal processing circuit 12 and amplifiers 11, 13.

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What is claimed is:

1. A component selection control system comprising a plurality of signal output components for outputting AV signals including audio signals and/or video signals, at least one signal input component for receiving the AV signal, and a signal processing control unit having connected thereto the signal output components and the signal input component, the signal processing control unit being operable to process the AV signal delivered from desired one of the signal output components as required for sound and/or image reproduction and to feed the AV signal delivered from the desired signal output component to the signal input component, the component selection control system being characterized in that:
- each of the signal output components has an on-off switch provided on a signal output line for delivering the AV signal to the signal processing control unit therethrough, the signal processing control unit having a common input terminal for receiving the AV signal from the desired signal output component, the signal output lines of the signal output components being connected to one another at a point connected to the common input terminal of the signal processing control unit, the on-off switches being controllable for opening or closing

to select one signal output component for feeding its AV signal to the signal processing control unit.

2. A component selection control system according to claim 1 wherein the signal processing control unit has a common output terminal for delivering the AV signal to the signal input component, and the common output terminal is connected to a signal input line of the signal input component.

3. A component selection control system comprising a plurality of signal output components for outputting AV signals including audio signals and/or video signals, a plurality of signal input components for receiving the AV signal, and a signal processing control unit having connected thereto the signal output components and the signal input components, the signal processing control unit being operable to process the AV signal delivered from desired one of the signal output components as required for audio and/or video reproduction and to feed the AV signal delivered from the desired signal output component to desired one or more of the signal input components, the component selection control system being characterized in that:

each of the signal output components has an on-off switch provided on a signal output line for delivering

the AV signal to the signal processing control unit
therethrough, each of the signal input components having
an on-off switch provided on a signal input line for
receiving the AV signal from the signal processing
5 control unit therethrough, the signal processing control
unit having a common input terminal for receiving the AV
signal from the desired signal output component and a
common output terminal for delivering the AV signal to
the desired signal input component, the signal output
10 lines of the signal output components being connected to
one another at a point connected to the common input
terminal of the signal processing control unit, the
signal input lines of the signal input components being
connected to one another at a point connected to the
15 common output terminal of the signal processing control
unit, the on-off switches being controllable for opening
or closing to select one signal output component for
feeding its AV signal to the signal processing control
unit and to select one or more of the signal input
20 components for receiving the AV signal from the signal
processing control unit.

4. A component selection control system according to
claim 3 wherein the AV signal to be delivered from the
signal output component and fed to the signal input

component is an audio signal, and the signal processing control unit comprises an amplifier circuit for amplifying the audio signal received by the common input terminal and feeding the resulting signal to a

5 subsequent speaker, and a signal feed line for feeding therethrough the audio signal received by the common input terminal.

5. A component selection control system according to claim 3 wherein each of the signal output components and
10 the signal input components has a control circuit for controlling the on-off switch thereof for opening or closing, and the control circuit prepares a control signal for the on-off switch in response to a command from a control circuit included in the signal processing
15 control unit.

ABSTRACT

The invention provides a component selection control system comprising signal output components 2 to 5, signal input components 4, 5, and an amplifier unit 1 having these components 2 to 5 connected thereto. The signal output components 2 to 5 have respective on-off switches 23, 33, 44, 54 provided on signal output lines 73 to 76 for delivering audio signals to the amplifier unit 1 therethrough, and the amplifier unit 1 has a common input terminal g. The signal output lines 73 to 76 of the output components 2 to 5 are connected to one another at a point connected to a common signal line 71, which is connected to the common input terminal g of the amplifier unit 1. This arrangement greatly reduces the numbers of signal lines and terminals required for connecting the components 2 to 5 to the amplifier unit 1.

FIG.2

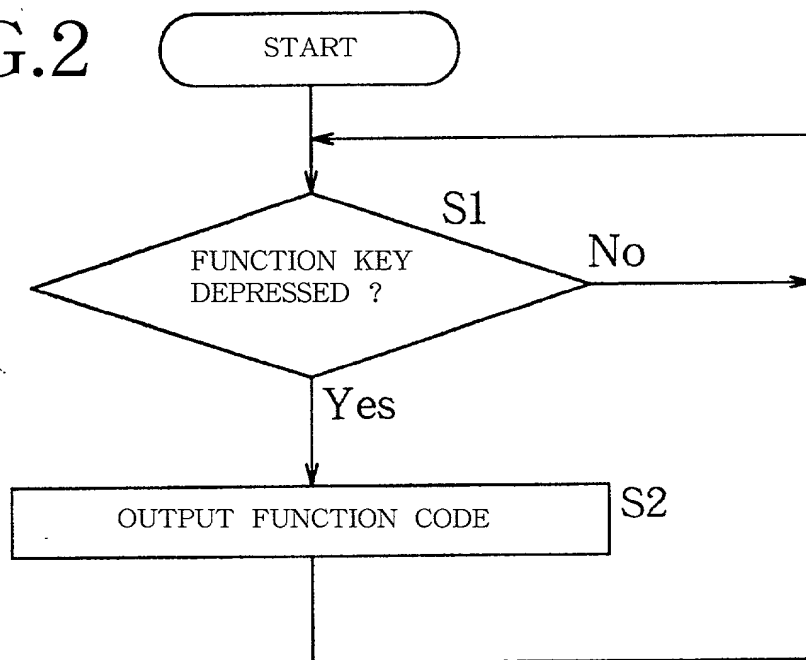


FIG.3

